WHAT IS CLAIMED IS:

Sub a2

1. An electronic device comprising a semiconductor device provided with pads and a substrate provided with pads on which substrate said semiconductor device is mounted, the pads of the semiconductor device being bonded to the pads of the substrate through junctions each including Cu balls and Cu-Sn compounds containing Cu_6Sn_5, said Cu balls being bonded to each other by said Cu-Sn compounds.

2. An electronic device according to claim 1, wherein each of said junctions contains at least one kind selected from the group consisting of In, Zn and Bi.

3. An electronic device according to claim 2, wherein each of said junctions has plastic balls.

4. An electronic device comprising a semiconductor device provided with pads and a substrate provided with pads on which substrate said semiconductor device is mounted, said pads of said semiconductor device being bonded to said pads of said substrate through solder portions each having Cu balls each surface of which is plated with one selected from the group consisting of Sn and a Sn-base alloy.

5. An electronic device comprising a semiconductor device provided with pads and a substrate provided with pads on which substrate said semiconductor device is mounted, said pads of said semiconductor device being bonded to said pads of said

substrate through solder portions each having Cu balls and solder balls, a weight ratio of said solder balls to said Cu balls being in a range of 0.6 to 1.4.

6. An electronic device according to claim 5, wherein said solder balls are one kind selected from the group consisting of eutectic Sn-Cu-base solder balls, eutectic Sn-Ag-base solder balls and eutectic Sn-Ag-Cu-base solder balls.

Sub a2

7. An electronic device according to claim 4 or 5, wherein at least one kind selected from the group consisting of In, Zn and Bi is added to said solder portions.

8. An electronic device according to claim 4 or 5, wherein said solder has plastic balls.

9. An electronic device according to claim 4 or 5, wherein said solder portions include particles of at least one kind selected from the group consisting of invar, silica, alumina, AlN and SiC.

10. An electronic device comprising a semiconductor device provided with pads, a first substrate provided with pads on which substrate said semiconductor device is mounted, and a second substrate provided with pads on which second substrate said first substrate is mounted,

said pads of the semiconductor device being bonded to said pads of the first substrate through junctions each including Cu balls and a Cu_6Sn_5 compound, said Cu balls being bonded to each other by said Cu_6Sn_5

compound,

said pads of the first substrate being bonded to said pads of the second substrate by one selected from the group consisting of a Sn-Ag-base solder, a Sn-Ag-Cu-base solder, a Sn-Cu-base solder and a Sn-Zn-base solder.

Sub A2

11. An electronic device comprising a semiconductor device provided with pads, a first substrate provided with pads on which substrate said semiconductor device is mounted, and a second substrate provided with pads on which second substrate said first substrate is mounted,

said pads of the semiconductor device being bonded to said pads of the first substrate through solder portions each including Cu balls each surface of which is plated with one selected from the group consisting of Sn and a Sn alloy,

said pads of the first substrate being bonded to said pads of the second substrate by one selected from the group consisting of a Sn-Ag-base solder, a Sn-Ag-Cu-base solder, a Sn-Cu-base solder and a Sn-Zn-base solder.

12. An electronic device comprising a semiconductor device provided with pads, a first substrate provided with pads on which substrate said semiconductor device is mounted, and a second substrate provided with pads on which second substrate said first substrate is mounted,

said pads of the semiconductor device being bonded to said pads of the first substrate through solder portions each including Cu balls and solder balls, a weight ratio of said solder balls to said Cu balls being in a range of 0.6 to 1.4,

said pads of the first substrate being bonded to said pads of the second substrate by one selected from the group consisting of a Sn-Ag-base solder, a Sn-Ag-Cu-base solder, a Sn-Cu-base solder and a Sn-Zn-base solder.

Sub a2

13. An electronic device according to any one of claims 10 to 12, said pads of the first substrate being bonded to said pads of the second substrate by a Sn-(2.0 to 3.5) Ag-(0.5 to 1.0) Cu solder.

14. An electronic device comprising a semiconductor chip provided on one face thereof with connection terminals, and a substrate provided with connection terminals on which substrate said semiconductor chip is mounted,

said connection terminals of said substrate and said connection terminals of said semiconductor chip are bonded to each other by wire bonding,

another face of said semiconductor chip and said substrate being bonded to each other through bonding portions each containing Cu balls and Cu_6Sn_5 compounds, said Cu balls being bonded to each other by said Cu_6Sn_5 compounds.

15. An electronic device according to claim 14,

Sub A2

said substrate comprising external connection terminals on a rear face regarding a face provided with said connection terminals, said external connection terminals being formed of at least one selected from the group consisting of a Sn-Ag-based solder, a Sn-Ag-Cu-based solder, a Sn-Cu-base solder and a Sn-Zn-based solder.